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22 June 2020

Version of attached file:

Accepted Version

Peer-review status of attached file:

Peer-reviewed

Citation for published item:

Blut, M. and Frennea, C.M. and Mittal, V. and Mothersbaugh, D. L. (2015) 'How procedural, financial and relational switching costs affect customer satisfaction, repurchase intentions, and repurchase behavior : a meta-analysis.', *International journal of research in marketing*, 32 (2). pp. 226-229.

Further information on publisher's website:

<https://doi.org/10.1016/j.ijresmar.2015.01.001>

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How Procedural, Financial and Relational Switching Costs Affect Customer Satisfaction, Repurchase Intentions, and Repurchase Behavior: A Meta-Analysis

Abstract

Switching costs and customer satisfaction may differently affect marketing strategy. Managers would benefit from knowing how different switching costs (financial, procedural, and relational) and satisfaction jointly affect repurchase in order to properly invest marketing resources. A meta-analysis of 233 effects from over 133,000 customers shows: (1) relational switching costs have the strongest association with repurchase intentions and behavior; and (2) procedural and relational switching costs mitigate the association between satisfaction and repurchase intentions/behavior whereas financial switching costs enhance it.

Keywords: switching costs, customer satisfaction, repurchase intentions, repurchase behavior

1. INTRODUCTION

How do customer satisfaction and different types of switching costs affect repurchase intentions and behaviors (Grewal, Chandrashekar, and Citrin 2010)? Burnham, Frels, and Mahajan (2003, p. 110) define switching costs as “onetime costs that customers associate with the process of switching from one provider to another,” and describe three types of switching costs: (1) *financial switching costs* (e.g., fees to break contract, lost reward points); (2) *procedural switching costs* (time, effort, and uncertainty in locating, adopting, and using a new brand/provider); and (3) *relational switching costs* (personal relationships and identification with brand and employees).

Burnham et al. (2003) empirically examined these switching costs in two samples: 158 credit card and 144 long-distance telephone customers. They found: relational switching costs exhibited the strongest association (.30) with repurchase intentions, followed by procedural (.20) and financial (.15) switching costs. However, contrary to their theory, switching costs did *not* moderate the relationship between satisfaction and repurchase intentions (all p 's $> .10$). Since then, empirical replications of Burnham et al. (2003) have produced inconsistent or conflicting results. We use a meta-analysis¹ to: (1) quantify the relative effect of different switching costs on repurchase intentions and behaviors; (2) and to examine the extent to which each type of switching cost moderates the association between customer satisfaction and repurchase intentions/behaviors.

2. METHODOLOGY

2.1 Search Process and Coding of Studies

¹ A complete list of articles included in our meta-analysis, the sample size, and the construct measured is displayed in Web Appendix A. A detailed description of our search, coding, and analysis procedures can be found in Web Appendix B.

We: (1) examined scientific databases (e.g. ProQuest) and manually searched major marketing journals using the search terms “switching costs,” “switching barriers,” and “customer/consumer satisfaction;” (2) examined the references of the articles collected to find additional articles; and (3) contacted authors to obtain unpublished studies and missing information from articles we already collected. We included studies reporting correlations or the standardized regression coefficients to maximize the number of effect sizes included (Peterson and Brown 2005).

Two independent coders extracted data and coded each study for variables such as effect size, sample size, and statistical artifacts. To account for study-design artifacts, they coded information to correct for sampling error, measurement error, dichotomization, and range restriction (Hunter and Schmidt 2004). The final dataset is based on 153 empirical articles, containing 178 independent samples and 133,734 subjects. In total, we analyzed 233 effect sizes.

2.2 Meta-Analysis: Three-Step Approach

Step 1 (Integrate effect sizes/pairwise analysis). We first corrected the collected effect sizes for the artifacts mentioned previously, and then calculated the simple average (corrected) correlation. Finally, we adjusted for sampling error and measurement error, resulting in sample-weighted reliability adjusted correlations. Table 1 displays the 95% confidence interval of the sample-weighted, reliability-adjusted correlations, an assessment of publication-bias (fail-safe N), and power calculations. Recognizing the limitations of fail-safe N, we also created funnel plots to assess publication bias. Reassuringly, results are statistically significant with no evidence of publication bias.

TABLE 1: META-ANALYTIC RESULTS OF THE ASSOCIATION BETWEEN SWITCHING COSTS, CUSTOMER SATISFACTION, AND CUSTOMER LOYALTY

Predictor	O	N	Min	Max	Simple Average Corrected Correlation	Sample- Weighted Average Corrected Correlation	Sample- Weighted Reliability Adjusted Corrected Correlation	Lower CI	Upper CI	Power (80%) N	Fail- Safe N
<i>Predictors of Repurchase Intentions</i>											
All Switching Costs → Repurchase Intentions	89	59,587	-.10	.74	.274	.275	.301*	.294	.308	84	464
Financial Switching Costs → Repurchase Intentions	23	17,815	.04	.60	.274	.224	.257*	.244	.271	116	98
Procedural Switching Costs → Repurchase Intentions	45	33,227	-.10	.60	.237	.274	.296*	.287	.306	87	230
Relational Switching Costs → Repurchase Intentions	21	8,545	-.07	.74	.353	.383	.406*	.388	.423	45	160
Customer Satisfaction → Repurchase Intentions	100	68,266	.06	.97	.515	.600	.643*	.639	.648	16	1,142
<i>Predictors of Repurchase Behavior</i>											
All Switching Costs → Repurchase Behavior	13	19,205	.02	.53	.282	.118	.135*	.121	.148	428	22
Financial Switching Costs → Repurchase Behavior	3	8,450	.02	.40	.162	.079	.107*	.086	.128	683	2
Procedural Switching Costs → Repurchase Behavior	7	10,028	.06	.49	.269	.127	.135*	.115	.154	428	10
Relational Switching Costs → Repurchase Behavior	3	727	.32	.53	.434	.422	.431*	.369	.488	39	16
Customer Satisfaction → Repurchase Behavior	31	37,156	-.03	.78	.338	.406	.413*	.405	.422	43	234

Notes: O = Number of data points; N = total sample size, Lower CI = lower confidence interval; Upper CI = upper confidence interval; Q = Q-statistic for homogeneity test. I² = % of variation due to heterogeneity; Power (80%) N = sample sizes required for a .80 chance of detecting effects at the .05-level; Fail-safe number attenuated at .05; All Switching Costs = Financial Switching Costs + Procedural Switching Costs + Relational Switching Costs; CS = Customer Satisfaction. * indicates significant at $p < .05$.

Step 2 (Path model to simultaneously assess relationships). Path analysis requires that effect sizes between every construct in the model be available. For this analysis, we determined the average-adjusted correlations among all associations in the framework that were reported in three or more studies (presented in Table 2). We converted correlations to co-variances using standard deviations, and input the complete covariance matrix in LISREL 8.80 (Franke and Park 2006).

Step 3 (Test moderating effect of switching costs using six split-path models). Finally, we examine if the association between customer satisfaction and repurchase intentions/behavior differs for high versus low switching costs to test the moderating role of switching costs. We used a median split for each switching cost to derive two separate correlation matrices representing effect sizes from industries with high (and low) switching costs.

3. RESULTS

3.1 Integrating effect sizes / pairwise relations

The results summarized in Table 1 support and replicate Burnham et al. (2003). With repurchase *intentions*, relational switching costs have a stronger association ($r = .406, p < .01$) than procedural ($r = .296, p < .01$) and financial switching costs ($r = .257, p < .01$); procedural switching costs also exhibit a stronger association than financial switching costs ($p < .01$).² With repurchase *behavior*, relational switching costs ($r = .431, p < .01$) have the strongest association, followed by procedural ($r = .135, p < .01$) and financial switching costs ($r = .107, p < .01$); procedural switching costs also have a stronger association with repurchase behavior than financial switching costs ($p < .05$).

² Z-tests (which take the cumulative sample size N into account) were used to assess the statistical significance of the differences between the sample-weighted reliability adjusted corrected correlations for each switching cost type.

**TABLE 2: SAMPLE-WEIGHTED, RELIABILITY-ADJUSTED CORRELATIONS
AMONG CONSTRUCTS**

	Financial Switching Costs	Procedural Switching Costs	Relational Switching Costs	Customer Satisfaction	Repurchase Intentions	Repurchase Behavior
<i>Financial Switching</i>	[.87]					
Number of studies	-					
Cumulative sample size	-					
Standard deviation	-					
<i>Procedural Switching</i>	.327	[.86]				
Number of studies	15	-				
Cumulative sample size	8,934	-				
Standard deviation	.23*	-				
<i>Relational Switching</i>	.347	.261	[.85]			
Number of studies	11	11	-			
Cumulative sample size	5,142	5,180	-			
Standard deviation	.21*	.16*	-			
<i>Customer Satisfaction</i>	.13	.231	.327	[.93]		
Number of studies	7	25	7	-		
Cumulative sample size	12,299	18,145	4,606	-		
Standard deviation	.16*	.14*	.18*	-		
<i>Repurchase Intentions</i>	.257	.296	.406	.643	[.85]	
Number of studies	23	45	21	100	-	
Cumulative sample size	17,815	33,227	8,545	68,266	-	
Standard deviation	.23*	.16*	.22*	.22*	-	
<i>Repurchase Behavior</i>	.107	.135	.431	.413	.446	[.86]
Number of studies	3	7	3	31	5	-
Cumulative sample size	8,450	10,028	727	37,156	16,465	-
Standard deviation	.20*	.16*	.11*	.23*	.24*	-
Standard deviation	1.57	1.72	1.35	1.35	1.34	1.11

3.2 Path model to simultaneously assess relationships

The results of the path analysis are reported in Table 3, Panel A and they are used to assess both direct and indirect effects. Regarding repurchase *intentions*, the path model replicates Burnham et al. (2003): relational switching costs exhibit the strongest association ($\beta = .170, p < .01$), followed by financial switching costs ($\beta = .083, p < .01$) and procedural switching costs ($\beta = .072, p < .01$). Results for repurchase *behavior* are different: (1) the total effect of relational switching costs is positive and strong; (2) the total effect of procedural costs is null, and (3) the total effect of financial costs is small, negative, and statistically significant. Finally, customer

satisfaction has a strong positive effect on repurchase intentions ($\beta = .550, p < .01$) and repurchase behavior ($\beta = .150, p < .05$).

TABLE 3: DIRECT AND JOINT EFFECT OF SWITCHING COST TYPES AND CUSTOMER SATISFACTION ON LOYALTY: PATH MODEL RESULTS

Panel A: Direct, Indirect, and Total Effects of Switching Costs in the Path Model				
	Repurchase Intentions	Repurchase Behavior		
	Total (Direct)	Direct (on RB)	Indirect (via RI)	Total (Direct +Indirect)
Financial Switching Costs	.083 ^{R**}	-.052 ^{PR**}	.016**	-.036**
Procedural Switching Costs	.072 ^{R**}	-.021 ^{PR**}	.014**	-.007
Relational Switching Costs	.170 ^{FP**}	.260 ^{FP**}	.032**	.292**
Customer Satisfaction	.550**	.150**	.105**	.255**
Repurchase Intentions	-	.190**	-	-
R ²	.480			.300
Note: For repurchase behavior, direct represents the direct effect of each switching costs type and satisfaction on repurchase behavior. Indirect effect represents the effect of each switching costs type and satisfaction on repurchase behavior via repurchase intentions. We tested the significance of the differential direct effects by separately constraining the effect to be equal, and testing the fit of the constrained versus unconstrained models using chi square-difference tests. Superscripts (P/R/F) indicate $\Delta\chi^2$ is significant at $p < .05$.				
* $p < .05$, ** $p < .01$				
Panel B: Switching Cost Type and Customer Satisfaction Interaction: Path Model Results Split by Level of Switching Costs				
	β High Switching Cost	β Low Switching Cost	$\Delta \beta$	
<i>Financial Switching Costs</i>				
Customer Satisfaction→Repurchase Intentions	.66	.59	.07**	
Customer Satisfaction→Repurchase Behavior	.18	.44	.26**	
<i>Procedural Switching Costs</i>				
Customer Satisfaction→Repurchase Intentions	.53	.68	.18**	
Customer Satisfaction→Repurchase Behavior	.17	.37	.20**	
<i>Relational Switching Costs</i>				
Customer Satisfaction→Repurchase Intentions	.51	.72	.21**	
Customer Satisfaction→Repurchase Behavior	.20	.38	.18**	
Note: Analyses are based on the sample-weighted and reliability adjusted correlation matrix.				
* $\Delta \beta$ significant at $p < .05$; ** $\Delta \beta$ significant at $p < .01$.				

3.3 Moderating effect of switching costs using six split path models

In Panel B of Table 3, we assess if the association between customer satisfaction and repurchase intention/behavior is moderated by switching costs, i.e., differs for high and low levels of each switching cost type. In all cases, the difference between high and low switching

costs is statistically significant, as shown in the last column of Table 3, Panel B. Except for one association (customer satisfaction and repurchase intentions in the presence of financial switching costs), results show that higher switching costs weaken the association between satisfaction and repurchase intentions/behavior. In other words, except for the case of financial switching costs enhancing the association between customer satisfaction and repurchase intentions, the association between customer satisfaction and repurchase intentions/behavior is stronger when switching costs are lower.

4. CONCLUSIONS AND DISCUSSION

Our meta-analytic results yield the following insights:

- A bivariate analysis replicates Burnham et al. (2003), finding an association between switching costs and repurchase intentions/behavior (relational > procedural > financial).
- Differences emerge in the multivariate analysis using a path model. Results for repurchase intentions replicate the bivariate analysis and Burnham et al. (2003). Results for repurchase behavior differ in the following ways: (1) the total effect of relational switching costs is positive and strong; (2) the total effect of procedural costs is null, and (3) the total effect of financial costs is small, negative, and statistically significant.
- As shown in Table 3 (Panel B), except for the case of financial switching costs enhancing the association between customer satisfaction and repurchase intentions, the association between customer satisfaction and repurchase intentions/behavior, is mitigated by the switching cost types.

Managerially, depending on their focus on repurchase intentions versus repurchase behavior, managers need to take a nuanced and differentiated approach to managing switching costs. Switching costs and customer satisfaction should be considered as complementary rather than competing approaches to managing repurchase intentions/behaviors. Increasing switching costs may directly enhance repurchase intentions and behaviors, but they may also weaken the link between customer satisfaction and repurchase. Striking the right balance to maximize repurchase will require that managers and researchers take a context-specific approach, and ask *why* switching costs may alter satisfaction's impact on repurchase intentions and behavior.

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Web Appendix A

STUDIES INCLUDED IN THE META-ANALYSIS

Sample	N	Study	Source	PSC	RSC	FSC	CS	Journal
1	22,300	1	Anderson and Sullivan (1993)				x	Marketing Science
2	1,662	2	Aydin and Özer (2006)	x		x		Journal of Targeting, Measurement and Analysis for Marketing
3	1,384	3	Babakus and Yavas (2008)				x	Journal of Business Research
4	276	4	Babin, Lee, Kim, and Griffin (2005)				x	Journal of Services Marketing
5	261	5	Back and Lee (2009)				x	Journal of Hospitality & Tourism Research
6	192	6	Balabanis et al. (2006)	x	x		x	Journal of Business Research
7	371	7	Bansal and Taylor (2002)	x				Psychology & Marketing
8	356	8	Bansal, Irving, and Taylor (2004)				x	Journal of the Academy of Marketing Science
9	202	9	Barry, Dion, and Johnson (2008)				x	Journal of Services Marketing
10	188	10	Bearden, and Teel (1983)				x	Journal of Marketing Research
11	728	11	Beatson, Lings, and Gudergan (2008)	x			x	The Service Industries Journal
12	685	12	Beatty, Reynolds, Noble, and Harrison (2012)	x			x	Journal of Service Research
13	576	13	Beerli et al. (2004)	x			x	European Journal of Marketing
14	514	14	Bell, Auth, and Smalley (2005)	x			x	Journal of the Academy of Marketing Science
15	432	15	Bernhardt, Donthu, and Kennett (2000)				x	Journal of Business Research
16	319	16	Bloemer and Kasper (1994)				x	Journal of Consumer Satisfaction, Dissatisfaction, and Complaining Behavior
17	205	17	Bloemer and Pauwels (1998)				x	Journal of Customer Satisfaction, Dissatisfaction, and Complaining Behavior
18	202		Bloemer and Pauwels (1998)				x	Journal of Customer Satisfaction, Dissatisfaction, and Complaining Behavior
19	589	18	Blut, Evanschitzky, Vogel, and Ahlert (2007)	x			x	Proceedings of the Advances in Consumer Research Conference
20	147	19	Brown, Barry, Dacin, and Gunst (2005)				x	Journal of the Academy of Marketing Science
21	397		Brown, Barry, Dacin, and Gunst (2005)				x	Journal of the Academy of Marketing Science
22	326	20	Chang and Chen (2007)		x			Journal of Air Transport Management
23	549	21	Chang and Chou (2011)			x	x	African Journal of Business Management
24	314	22	Chang and Chen (2009)				x	Information & Management
25	186	23	Chebat et al. (2011)	x			x	Journal of Business Research
26	737	24	Cheng, Lai, and Yeung (2008)	x			x	International Journal of E-Business Research
27	527	25	Chih, Wang, and Cheng (2011)				x	The Service Industries Journal
28	873	26	Chuang	x	x		x	Telecommunications Policy
29	389	27	Chuchimrakam (1999)			x		Dissertation at the University of Maryland
30	1,583	28	Coelho and Hensler (2012)			x	x	European Journal of Marketing
31	521		Coelho and Hensler (2012)				x	European Journal of Marketing
32	514	29	Cohen, Yong, Chong (2007)				x	Banks and Bank Systems
33	224	30	Dabholkar and Thorpe (1994)				x	Journal of Consumer Satisfaction, Dissatisfaction, and Complaining Behavior
34	319	31	Davidow (2003)				x	Journal of Consumer Satisfaction, Dissatisfaction, and Complaining Behavior
35	403	32	de Matos, Vieira, and Veiga (2012)				x	The Service Industries Journal
36	231	33	De Wulf, Odekerken-Schroder, and Iacobucci (2001)				x	Journal of Marketing
37	230		De Wulf, Odekerken-Schroder, and Iacobucci (2001)				x	Journal of Marketing
38	337		De Wulf, Odekerken-Schroder, and Iacobucci (2001)				x	Journal of Marketing
39	338		De Wulf, Odekerken-Schroder, and Iacobucci (2001)				x	Journal of Marketing

88	379		Jones, Reynolds, Mothersbaugh, and Beatty (2007)	x	x		Journal of Service Research
89	1,127	69	Jones, Taylor, Becherer, and Halstead (2003)			x	Journal of Consumer Satisfaction, Dissatisfaction, and Complaining Behavior
90	765	70	Kaur, Sharma, and Mahajan (2012)			x	International Journal of Bank Marketing
91	110	71	Keiningham, Perkins-Munn, and Evans (2003)			x	Journal of Service Research
92	149		Keiningham, Perkins-Munn, and Evans (2003)			x	Journal of Service Research
93	83		Keiningham, Perkins-Munn, and Evans (2003)			x	Journal of Service Research
94	310	72	Kim (2009)	x	x		Dissertation at Kansas State University
95	367	73	Kim and Gupta (2012)			x	Psychology & Marketing
96	510	74	Kim and Son (2009)	x	x		MIS Quarterly
97	1,408	75	Kim, Shin, and Lee (2006)	x			Information & Management
98	249	76	Kumar (2002)	x			Journal of Service Research
99	87	77	LaBarbera and Mazursky (1983)			x	Journal of Marketing Research
100	679	78	Lam, Ahearne, Hu and Schillewaert (2010)	x	x		Journal of Marketing
101	268	79	Lam, Shankar, Erramilli, and Murthy (2004)	x			Journal of the Academy of Marketing Science
102	268		Lam, Shankar, Erramilli, and Murthy (2004)			x	Journal of the Academy of Marketing Science
103	522	80	Larivière (2008)			x	Journal of Service Research
104	165	81	Lee and Cunningham (2001)	x			Journal of Services Marketing
105	244	82	Lee and Murphy (2008)	x			Australasian Marketing Journal
106	330	83	Lim (2005)			x	Dissertation at Purdue University
107	110	84	Liu (2008)				International Journal of Internet and Enterprise Management
108	98		Liu (2008)				International Journal of Internet and Enterprise Management
109	72		Liu (2008)				International Journal of Internet and Enterprise Management
110	311	85	Liu, Guo, and Lee (2011)				International Journal of Information Management
111	209	86	Liu, Leach, and Bernhardt (2005)	x			Journal of Business Research
112	450	87	Loveman (1998)			x	Journal of Service Research
113	643	88	Magi (2003)			x	Journal of Retailing
114	7,461	89	Matos, Henrique, and Rosa (2009)			x	International Journal of Bank Marketing
115	1,463	90	Methlie and Nysveen (1999)	x			Journal of Information Technology
116	569	91	Morgan and Rego (2006)			x	Marketing Science
117	234	92	Nusair, Parsa, and Cobanoglu (2011)			x	Tourism Management
118	154	93	Nyer (1998)			x	Journal of Consumer Satisfaction, Dissatisfaction, and Complaining Behavior
119	104	94	Oliver, Rust, and Varki (1997)			x	Journal of Retailing
120	90		Oliver, Rust, and Varki (1997)			x	Journal of Retailing
121	1,206	95	Patterson and Smith (2003)	x	x		Journal of Retailing
122	172	96	Perkins-Munn, Aksoy, Keiningham, and Estrin (2005)			x	Journal of Service Research
123	267		Perkins-Munn, Aksoy, Keiningham, and Estrin (2005)			x	Journal of Service Research
124	202	97	Phuong Thao and Swierczek (2007)			x	Asia Pacific Journal of Marketing and Logistics
125	231	98	Ping (1990)			x	Dissertation at the University of Cincinnati
126	222	99	Ping (1993)			x	Journal of Retailing
127	75	100	Pritchard and Silvestro (2005)			x	International Journal of Service Industry Management
128	432	101	Ranaweera and Prabhu (2003)	x			International Journal of Service Industry Management
129	472	102	Ray, Kim, and Morris (2012)	x	x		Information Systems Research
130	281	103	Roberts (1989)			x	Dissertation at Arizona State University
131	211	104	Rosenbaum, Massiah, and Jackson (2006)			x	Services Marketing Quarterly
132	94		Rosenbaum, Massiah, and Jackson (2006)			x	Services Marketing Quarterly
133	92		Rosenbaum, Massiah, and Jackson (2006)			x	Services Marketing Quarterly
134	1,050	105	Saitos and Kreis (2010)	x			Journal of Business Market Management
135	174	106	Scheer, Miao, and Garrett, J. (2010).			x	Journal of the Academy of Marketing Science

136	945	107	Seiders, Ross, Grewal, and Godfrey (2005)				x	Journal of Marketing
137	180	108	Silvestro and Cross (2000)				x	International Journal of Service Industry Management
138	114	109	Söderlund and Öhman (2003)				x	Journal of Consumer Satisfaction, Dissatisfaction, and Complaining Behavior
139	101		Söderlund and Öhman (2003)				x	Journal of Consumer Satisfaction, Dissatisfaction, and Complaining Behavior
140	410	110	Spreng, Harrell, and Mackoy (1995)				x	Journal of Services Marketing
141	243	111	Swan and Trawick (1981)				x	Journal of Retailing
142	429	112	Taylor and Barry (1994)				x	Journal of Retailing
143	224	113	Taylor and Hunter (2003)				x	Journal of Consumer Satisfaction, Dissatisfaction, and Complaining Behavior
144	236	114	Tsai, Tsai, and Chang (2010)			x	x	Social Behavior and Personality
145	374	115	Tung, Kuo, and Kuo (2011)			x	x	Australian Journal of Business and Management Research
146	1,378		van Birgelen, de Jong, and de Ruyter (2006)					Journal of Retailing
147	399	116	van Doorn and Verhoef (2008)				x	Journal of Marketing
148	800	117	Vázquez-Carrasco and Foxall (2006)			x	x	Journal of Consumer Behaviour
149	554	118	Vázquez-Caselles, Suárez-Alvarez, and Del Río-Lanza (2009)				x	Journal of Applied Social Psychology
150	241	119	Venetis and Ghauri (2004)			x		European Journal of Marketing
151	1,128	120	Verhoef (2003)				x	Journal of Marketing
152	1,986	121	Verhoef, Frances, and Hoekstra (2002)				x	Journal of the Academy of Marketing Science
153	163	122	Vieira, Monteiro, and Veiga (2011)				x	Journal of Business & Industrial Marketing
154	525	123	Voorhees and Brady (2005)				x	Journal of Service Research
155	1,162	124	Voss, Godfrey, and Seiders (2010)				x	Journal of Marketing
156	462	125	Walsh, Dinnie, and Wiedmann (2006)				x	Journal of Services Marketing
157	177	126	Wang (2004)			x		Dissertation at McMaster University
158	177	127	Wang and Head (2007)			x		Information & Management
159	418	128	Wangenheim (2003)			x		Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior
160	60	129	Webb and Jagun (1997)				x	Journal of Consumer Satisfaction, Dissatisfaction, and Complaining Behavior
161	154	130	Westbrook (1987)				x	Journal of Marketing Research
162	78	131	Whittaker, Ledden, and Kalafatis (2007)				x	Journal of Services Marketing
163	7,268	132	Wieringa and Verhoef (2007)			x		Journal of Service Research
164	215	133	Wirtz and Chew (2002)				x	Journal of Service Management
165	257	134	Wirtz and Lee (2003)				x	Journal of Service Research
166	440	135	Woitschlaeger, Lentz, and Evanschitzky (2011)			x	x	Journal of Business Research
167	743	136	Wong (2009)				x	Ibima Business Review
168	529	137	Wu (2011)				x	Journal of Services Marketing
169	376	138	Yanamandram and White (2010)			x	x	Australasian Marketing Journal
170	235	139	Yang and Peterson (2004)			x		Psychology & Marketing
171	260	140	Yen (2011)			x		African Journal of Business Management
172	256		Yen (2011)			x		African Journal of Business Management
173	459	150	Yen and Gwinner (2003)				x	Journal of Services Management
174	262	151	Zboja and Voorhees (2006)				x	Journal of Services Marketing
175	174		Zboja and Voorhees (2006)				x	Journal of Services Marketing
176	169	152	Zhang, Lee, Cheung, and Chen (2009)				x	Decision Support Systems
177	130		Zhang, Lee, Cheung, and Chen (2009)				x	Decision Support Systems
178	1,037	153	Zhang and Bloemer (2008)				x	Journal of Service Research

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Web Appendix B

[1] *Coding of Studies*

From each article, two independent coders extracted data on the variables of interest, including effect sizes (r), sample sizes, statistical artifacts, and study characteristics. The coders used the following construct definitions to classify variables and code effect sizes for the associations of interest.

Variable	Definition	Examples/References to Constructs in Other Papers
Financial Switching Costs	Financial switching costs involve the loss of financially quantifiable resources, including monetary losses (e.g., fees to break contract, initiation fees to adopt a new brand or provider) and lost benefits (e.g., loss of reward points, preferred access, or special status). (Source: Burnham, Frels, and Mahajan 2003)	<ul style="list-style-type: none"> • Benefit loss costs • Monetary loss costs • Lost performance costs • Sunk costs
Procedural Switching Costs	Procedural switching costs involve the expenditure of time and effort in locating, adopting, and using a new brand/provider as well as the uncertainty associated with this process. (Source: Burnham, Frels, and Mahajan 2003)	<ul style="list-style-type: none"> • Economic risk costs • Evaluation costs • Set up costs • Learning costs • Search costs • Behavioral & cognitive costs
Relational Switching Costs	Relational switching costs involve psychological or emotional discomfort due to the loss of identity and the breaking of bonds associated with the brand/provider or any employees with who the customer interacts. (Source: Burnham, Frels, and Mahajan 2003)	<ul style="list-style-type: none"> • Personal relationship loss costs • Brand relationship loss costs • Interpersonal relationships
Customer Satisfaction	A customer's overall judgment that a product or service provided (or is providing) a pleasurable level of consumption-related fulfillment (Source: Oliver 2010)	<ul style="list-style-type: none"> • Overall satisfaction • Cumulative satisfaction
Repurchase Intentions	Repurchase intention is defined as the intent to maintain the relationship in the future which captures the likelihood continued purchases from the firm. (Source: Anderson 1994)	<ul style="list-style-type: none"> • Purchase intentions • Likelihood to leave (reverse) • Relationship continuity
Repurchase Behavior	Repurchase behavior is the actual act of relationship maintenance with a product or service provider and may be measured via repurchase or continuance of services (e.g., resign contract). (Source: Mittal and Kamakura 2001)	<ul style="list-style-type: none"> • Retention

Overall, the coders had a 91% agreement rate with disagreements resolved via discussion. Some samples contain multiple correlations on the same association between two constructs due to the use of multiple measures of the same construct (e.g., the relationship between procedural switching costs and repurchase intentions was reported twice for the same sample using different measures). To ensure that the sample does not receive a disproportionate weight in our analyses, we followed Hunter and Schmidt (1990) and averaged the correlations and report the data as a single study. Hunter and Schmidt (2004) identify multiple study-design artifacts that can bias effect sizes. To correct for these statistical artifacts, we coded information on the following artifacts: (a) sampling error, (b) measurement error in the dependent variable, (c) measurement error in the independent variable, (d) dichotomization of a continuous dependent variable, (e) dichotomization of a continuous independent variable, (f) range restriction in a dependent dichotomous variable, and (g) range restriction in an independent dichotomous variable.

[2] *Inclusion criteria*

We employed several rules to determine which of the collected studies to include in the meta-analysis. First, we are interested in the empirical relationship between different types of switching costs and their effect on repurchase intentions and repurchase behavior; thus, we included all studies reporting one or more of these associations. Since there are conceptually three types of switching costs, we excluded measures that do not directly match one of the three types. Including the three measures enables us to report the effect of overall switching costs (aggregation of all measures) and differentiated switching costs (procedural, financial, and relational). Since we also compare the effects of switching costs with customer satisfaction on the loyalty outcomes, we also included studies reporting the association between customer satisfaction and repurchase intentions or behavior. Second, to be included in the analysis studies had to report either correlations (r) between the variables of interest or the standardized regression coefficients to provide the maximum number of effect sizes, increasing the generalizability of our results (Peterson and Brown 2005). The majority of the effect sizes were based on Pearson correlation coefficients (94%) and 6% were correlations derived from beta coefficients. We converted the beta coefficients into r 's using the formula proposed by Peterson and Brown (2005).

[3] *Integration of effect sizes*

We integrated the effect sizes using a stepwise approach as suggested by Hunter and Schmidt (2004). We began by correcting the collected effect sizes for dichotomization and range restriction. Then, using these partially corrected effect sizes, we calculated the simple average (corrected) correlation. Finally, we adjusted for sampling error and measurement error, resulting in sample-weighted reliability adjusted correlations. For each bivariate relationship, we present a 95% confidence interval of this sample-weighted reliability adjusted correlation, which is significant when it does not include zero. Before applying the weights, we converted the r 's to Fisher's z scores (Rosenthal 1994). They were reconverted back to r 's to report the sample-weighted reliability-adjusted r and the 95% CIs. For the significant mean effect sizes, we calculated the fail safe N ; this indicates the number of non-significant and unavailable studies that would be needed to make the cumulative effect size become non-significant. It is a measure of the robustness of the results and assesses publication bias (Rosenthal 1979). Similar to other meta-analyses, we chose a level of .05 as "just significant" (Grewal et al. 1997). File-drawer N s range between 2 and 1,142; small values exist only for those associations based on fewer than five effect sizes. All associations which were based on at least five effect sizes require more than 16 null missing studies to generate an insignificant effect. However, we note that fail-safe N has several limitations (detailed in Begg 1994); to address these limitations we also created funnel plots to further assess publication bias. Reassuringly, the funnel plots support the conclusion of the file-drawer N calculations; the data in this meta-analysis does not display evidence of publication bias. Funnel plots are available from the authors upon request. Finally, we also assessed the power of our tests. The values reported in Table 1 indicate the sample size required for an 80% chance of detecting effects at the .05 level. Results suggest the power of our test is relatively low; that is, the number of available effects is less than the sample size required by the

power analysis. However, most meta-analyses analyze relationships of interest even when the number of effects is small.

[4] *Estimating the structural equation model*

We used path analysis to simultaneously examine the impact of switching costs and customer satisfaction on repurchase intentions and behavior. Here we can ascertain if the link from switching costs to loyalty outcomes is stable when controlling for satisfaction. The meta-analytic path analysis requires that in addition to the calculated correlations between the predictor variables and the outcome variables, we also calculate the sample-weighted reliability-adjusted correlations between all predictors (Geyskens et al. 1999). For this analysis, we determined the average-adjusted correlations among all associations in the framework that were reported in three or more studies. One limitation of this approach is possible bias resulting from heterogeneity between studies combined to compute the correlation matrix. However, the literature suggests a degree of heterogeneity is acceptable. For example, Cortina (2003) examined 1,647 meta-analyses and suggests standard deviations of the corrected effect sizes between .050 and .265 are acceptable. The standard deviations of our effect sizes fall within this range, indicating analysis can proceed. Due to the variability in sample sizes associated with each correlation in the correlation matrix, we employ the harmonic mean of all sample sizes entered in the meta-analytic correlation matrix (Viswesvaran and Ones 1995) which is $N=5,450$.¹ As a final step, we converted correlations to covariances using standard deviations. The analyses use the complete covariance matrix as input to LISREL 8.80 to test our model (Franke and Park 2006).²

[5] *Split path model*

We analyzed the moderating effect of switching costs on the association between customer satisfaction and loyalty. In addition to the full path model just described, we ran six reduced models. Specifically, we applied a median split to each switching costs variable to derive one correlation matrix for effect sizes from industries with high levels of switching costs and a separate correlation matrix for effect sizes from industries with low levels of switching costs. We did this for each switching cost type, resulting in six total correlation matrices (which were converted to co-variances prior to path analysis). We chose a reduced structural equation model for this test since we do not have full information on all correlations in Table 2 when we split the data.

[6] *References*

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¹ Using the harmonic mean has the advantage that the fit of the model would not be biased by a particular relationship that involves a large cumulated total sample size. Compared to the arithmetic mean and the median, the harmonic mean is lower and the estimations in the SEM are more conservative.

² We also modeled a path between repurchase intention and repurchase behavior (Bansal and Taylor 2002).

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